Solving Formulas (Literal Equations)

A *literal* equation means an equation with *letters*. Formulas are literal equations. For example: A = LW, or C = $2\pi r$.

Example: Solve the equation $S - 2w = wT$ (a) for T and (b) for w.

solution: (a) To solve for T divide both sides of the equation by w. This gives: $\dfrac{S-2w}{w} = T$.

(b) To solve for w first add $2w$ to both sides of the equation to get $S = 2w + wT$.

Now factor out w on the right-hand side of the equation. This gives $S = w(2+T)$. Finally,

divide both sides by 2 + T. The solution is: $\dfrac{S}{2+T} = w$.

Problems

Solve each equation for the given variable in terms of all other variables.

1. Solve $P = 2w + 2L$ for w.

2. Solve $A = \pi r^2$ for r.

3. Solve $V = \pi r^2 h$ for h

4. Solve $ab + ac = bc$ for a.

5. Solve $PV = nrT$ for T

6. Solve $\dfrac{P}{Q} = a + b$ for Q

7. Solve $L = 2a + (n-1)d$ for d

8. Solve $abc = a + b + c$ for a

9. Solve $\dfrac{1}{a} + \dfrac{1}{b} = \dfrac{1}{c}$ for c

10. Solve $y = mx + b$ for m